

REMARKS

In the last Office Action, the Examiner rejected claims 1, 3 and 13-15 under 35 U.S.C. §103(a) as being unpatentable over European Patent No. 1,138,831 to Hanafusa et al. ("Hanafusa") in view of U.S. Patent No. 6,823,947 to Nagaoka et al. ("Nagaoka"). Claims 5-6 were allowed by the Examiner. Claims 2, 4, 7-12 and 16-20 were objected to as being dependent upon a rejected base claim, but indicated to be allowable if rewritten in independent form to incorporate the subject matter of the base claim and any intervening claims.

Applicants note that while the Office Action Summary indicates that claims 1, 3 and 13-15 are allowed and that claims 5-6 are rejected, it is clear from the Detailed Action that the status of the claims is that claims 5-6 are allowed and claims 1, 3 and 13-15 remain rejected over the prior art as set forth above.

Applicants and applicants' counsel note with appreciation the indication of allowable subject matter concerning claims 2, 4-12 and 16-20. However, for the reasons noted below, applicants respectfully submit that claims 1, 3 and 13-15 also patentably distinguish from the prior art of record.

As set forth in detail below, the combined teachings of Hanafusa and Nagaoka do not disclose or suggest the structural combination of the working machine recited in claims 1, 3 and 13-15. Applicants therefore request reconsideration of claims 1, 3 and 13-15 without further amendment thereof.

Brief Summary of Invention

The present invention is directed to a working machine, such as snow removing machines and cultivating machines.

Figs. 12-14 show conventional working machines in the form of snow removing machines. As described in the specification (pages 1-4), the conventional snow removing machines have a large number of component parts and are associated with a large size and weight as well as a relatively complicated shape and high rigidity. For example, due to their excessive length, the conventional snow removing machines have poor turning capability. As a result, the traveling performance of the conventional snow removing machines has been ineffective in providing smooth snow removal operations with high efficiency.

The present invention overcomes the drawbacks of the conventional art. Figs. 1-7 show an embodiment of a working machine 10 according to the present invention embodied in the

claims. The working machine 10 has a transmission case 50 having a transmission mechanism 130 accommodated therein. The transmission mechanism 130 has an input shaft 131 having a first longitudinal axis and an output shaft 132 having a second longitudinal axis extending in a direction generally perpendicular to the first longitudinal axis (Fig. 5). A working unit 70 is mounted to a front portion or a side portion of the transmission case 50 and is connected to the output shaft 132 of the transmission mechanism 130. A working drive source 61 is connected to the input shaft 131 of the transmission mechanism 50 for driving the working unit 70 via the transmission mechanism 130. The working drive source 61 is mounted to an upper surface portion of the transmission case 50. A traveling unit 30L, 30R has at least one driving axle 34L, 34R mounted to a side portion of the transmission case 50. An electric motor 20L, 20R is mounted to a side portion of the transmission case 50 for driving the traveling unit 30L, 30R.

By the foregoing construction, the size and weight, as well as the number of components, of the working machine 10 according to the present invention are substantially reduced as compared to the conventional art. As a result, the operability of the working machine is improved, including the turning capability of the working machine during a working operation.

Traversal of Prior Art Rejection

Claims 1, 3 and 13-15 were rejected under 35 U.S.C. §103(a) as being unpatentable over Hanafusa in view of Nagaoka. Applicants respectfully traverse this rejection and submit that the combined teachings of Hanafusa and Nagaoka do not disclose or suggest the subject matter recited in claims 1, 3 and 13-15.

It is well settled that the Examiner must satisfy her burden of establishing a prima facie case of obviousness by showing that some objective teaching or suggestion in the applied prior art taken as a whole and/or knowledge generally available to one of ordinary skill in the art would have led that person to the claimed invention, including each and every limitation of the claims, without recourse to the teachings in applicants' disclosure. See generally, In re Rouffet, 47 USPQ2d 1453, 1456, 1457-1458 (Fed. Cir. 1998); In re Oeticker, 24 USPQ2d 1443, 1446-47 (Fed. Cir. 1992). In this case, the Examiner has failed to carry her burden of making out a prima facie case of obviousness with respect to the subject matter recited in independent claims 1 and 13 and corresponding dependent claims 3 and 14-15, as set forth below.

Independent Claim 1

Independent claim 1 is directed to a working machine and requires a transmission case having a transmission mechanism accommodated therein, the transmission mechanism having an input shaft having a first longitudinal axis and an output shaft having a second longitudinal axis extending in a direction generally perpendicular to the first longitudinal axis. Claim 1 further requires a working unit mounted to a front portion or a side portion of the transmission case and connected to the output shaft of the transmission mechanism, and a working drive source connected to the input shaft of the transmission mechanism for driving the working unit via the transmission mechanism, the working drive source being mounted to an upper surface portion of the transmission case. Claim 1 further requires a traveling unit having at least one driving axle mounted to a side portion of the transmission case and an electric motor mounted to a side portion of the transmission case for driving the traveling unit. No corresponding structural combination is disclosed or suggested by the combined teachings of Hanafusa and Nagaoka.

Hanafusa discloses a snow plow having a working unit 13, a traveling unit 12, an engine 14 (working device), an electric motor 21L, 21R, and a transmission belt 103 for driving an output shaft 105 connected to the working unit 13

(Figs. 1 and 5). As recognized by the Examiner, Hanafusa does not disclose or suggest a transmission mechanism having a vertically oriented input shaft for transmitting power from a working device to an output shaft. In Hanafusa, the belt 103 of the transmission mechanism transmits power from the engine 14 to the output shaft 105 connected to the working unit 13.

As further recognized by the Examiner, Hanafusa also does not disclose or suggest the specific positional relationship between the input and output shafts of the transmission mechanism specified in claim 1. More specifically, Hanafusa does not disclose or suggest a transmission mechanism comprised of an input shaft having a first longitudinal axis and an output shaft having a second longitudinal axis extending in a direction generally perpendicular to the first longitudinal axis. As described in the specification, the positional relationship between the input and output shafts of the transmission mechanism reduces the overall front-to-rear dimension of the transmission case and, therefore, the overall dimension of the working machine. As noted above, Hanafusa does not disclose or suggest a vertically oriented input shaft.

The Examiner cited the secondary reference to Nagaoka which discloses a working machine having a working unit connected to an output shaft 71 of a transmission

mechanism driven by a working device 20. A vertically oriented input shaft 51 transmits power from the working device 20 to the output shaft 71. The Examiner contends that in Hanafusa the input shaft 51 is connected "generally perpendicular" to the output shaft 71. The Examiner therefore concludes that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the transmission mechanism of Hanafusa in view of Nagaoka by replacing the belt 103 with a vertically oriented input shaft and further so that such vertically oriented input shaft is "generally perpendicular" to the output shaft 105 of Hanafusa, in order to reduce the overall size of the working machine in Hanafusa. Applicants vigorously disagree with the Examiner's contentions.

First, it is unclear how the Examiner proposes to modify the transmission mechanism of Hanafusa to incorporate a vertically oriented input shaft. In this regard, Hanafusa and Nagaoka disclose different types of working devices (i.e., engines). Hanafusa does not disclose a vertical working device as disclosed by Nagaoka. Accordingly, one of ordinary skill in the art would not have been led to look into vertical working devices, such as is taught by Nagaoka, to modify the non-vertical working device of Hanafusa to arrive at the invention recited in independent claim 1 (i.e., to modify

Hanafusa by incorporating a transmission mechanism having a vertically oriented input shaft).

Moreover, even if it were proper to modify Hanafusa in view of Nagaoka as suggested by the Examiner, the proposed combination would not lead to the present invention embodied in independent claim 1. More specifically, Nagaoka fails to disclose or suggest a transmission mechanism comprised of an input shaft having a first longitudinal axis and an output shaft having a second longitudinal axis extending in a direction "generally perpendicular" to the first longitudinal axis. In Nagaoka, the longitudinal axes of the transmission mechanism input and output shafts do not extend generally perpendicular to one another. As shown in Fig. 2 and described in columns 7, lines 10-15 of Nagaoka, the input shaft 51 and the output shaft 71 are disposed at an angle about 60° relative one another (i.e., the angle formed between the input and output shafts 61, 71 is not generally 90°).

Thus, even if it were proper to modify Hanafusa in view of Nagaoka as suggested by the Examiner, the proposed combination would not lead to the present invention embodied in independent claim 1 because Nagaoka does not disclose or suggest the specific positional relationship between the input and output shafts of the transmission mechanism, as recited in independent claim 1. Since Nagaoka does not disclose or

suggest the specific positional relationship between the input and output shafts of the transmission mechanism, Nagaoka does not cure the deficiencies of Hanafusa. Accordingly, one of ordinary skill in the art would not have been led to modify the references to attain the claimed subject matter.

Independent Claim 13

Independent claim 13 defines the invention in a different manner and provides a different scope of coverage from independent claim 1. For example, while not limited to the specific positional relationship between the longitudinal axes of the input and output shafts of the transmission mechanism as required by independent claim 1, claim 13 requires that the working unit, the working drive source and the transmission mechanism are pivotable about a central axis of the driving axle of the traveling unit. No corresponding structure is disclosed or suggested by the combined teachings of Hanafusa and Nagaoka.

In the final Office Action, the Examiner contends that the working machine in Hanafusa is capable of being pivotable about a central axis of the rear wheels of the combined working machine "if enough backward force is applied to the handle with the backward wheels held stationary". Applicants vigorously disagree with the Examiner's contention and with the Examiner's interpretation of the reference to

Hanafusa to arrive at the invention recited in independent claim 13.

Applicants respectfully submit that the Examiner's proposed modification of Hanafusa is improper because the prior art teaches away from the claimed combination. A reference teaches away when a person of ordinary skill in the art, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that the applicants took. In re Gurley, 31 USPQ2d 1130, 1131 (Fed. Cir. 1994). Stated another way, a reference teaches away if it suggests that the line of development falling from the reference's disclosure is unlikely to be productive of the result sought by applicants. W.L. Gore & Assocs. v. Garlock, Inc., 220 USPQ 303, 311 (Fed. Cir. 1983) (the totality of a reference's teachings must be considered), cert. denied, 469 U.S. 851 (1984); In re Caldwell, 138, USPQ 243, 245 (CCPA 1969) (reference teaches away if it leaves the impression that the product would not have the properties sought by the applicant).

In this case, the prior art teaches away from the claimed combination because Hanafusa does not disclose or suggest any structure that would permit a working unit, a working drive source and a transmission mechanism of the

working machine to pivot about a central axis of a driving axle of the working machine. The Examiner's application of Hanafusa in the rejection requires a backward force to be applied to one or more of the foregoing components of the working machine relative to a central axis of the rear wheels, while holding the rear wheels stationary, in order to achieve what the Examiner contends is the pivotal movement recited in independent claim 13. However, since Hanafusa does not teach any structure which permits such components of the working machine to pivot about the central axis of the rear wheels, the application of such force, if at all possible, would cause such components to potentially break away from the structure of the working machine. Indeed, the modification of Hanafusa proposed by the Examiner would render the working machine of Hanafusa inoperable. Thus the structure of the working machine resulting from the Examiner's modification of Hanafusa would clearly be contrary to the teachings of Hanafusa.

Thus, one of ordinary skill in the art at the time the invention was made would not have been led to cause the working machine in Hanafusa to pivot about a central axis of the rear wheels of the combined working machine by application of enough backward force to the handle with the backward wheels held stationary, as proposed by the Examiner. Accordingly, independent claim 13 is not rendered obvious by

the teachings of Hanafusa because the reference does not suggest the modifications that would be needed to replicate the claimed invention. In the context of obviousness rejections based upon the purported obviousness of effecting a required modification, the Federal Circuit has held that "[t]he mere fact that the prior art may be modified in [a given] manner ... does not make the modification obvious unless the prior art suggested the desirability of the modification". In re Fritch, 23 USPQ2d 1780, 1783 (Fed. Cir. 1992). There is nothing in Hanafusa that would have suggested modifying the structure of the working machine to achieve a working machine having a working unit, a working drive source and a transmission mechanism which are pivotable about a central axis of the driving axle of the traveling unit, as discussed above and recited by independent claim 13.

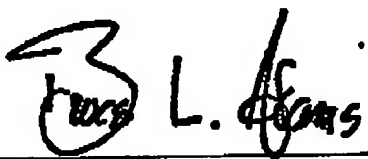
Claims 3 and 14-15 depend on and contain all of the limitations of independent claims 1 and 13, respectively, and, therefore, distinguish from Hanafusa and Nagaoka at least in the same manner as independent claims 1 and 13.

In view of the foregoing, applicants respectfully request that the rejection of claims 1, 3 and 13-15 under 35 U.S.C. §103(a) as being unpatentable over Hanafusa in view of Nagaoka be withdrawn.

In view of the foregoing amendments and discussion,
the application is believed to be in allowable form.
Accordingly, favorable reconsideration and allowance of the
claims are most respectfully requested.

Respectfully submitted,

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